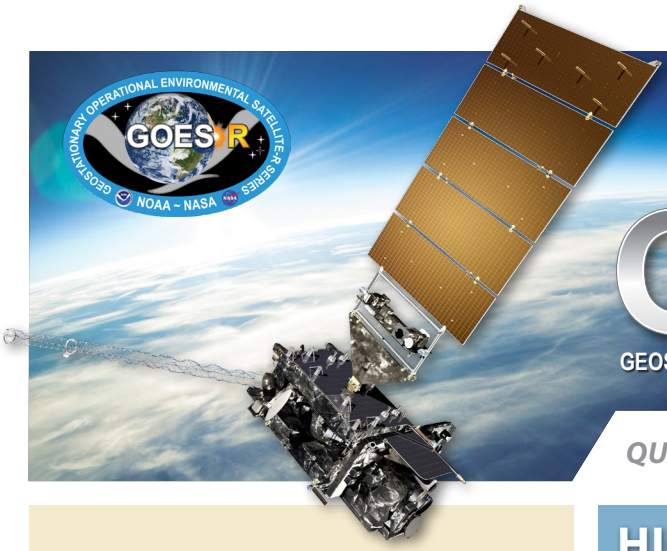


GOES-R

GEOSTATIONARY OPERATIONAL ENVIRONMENTAL SATELLITE R-SERIES

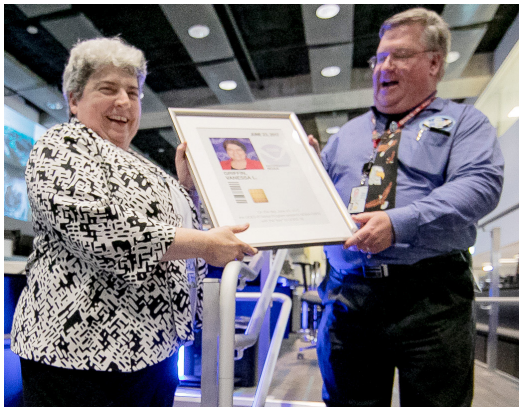
QUARTERLY NEWSLETTER ■ APRIL–JUNE 2017 ■ ISSUE 18

A Note from Mike Stringer, Acting GOES-R System Program Director:

We have officially turned the GOES-16 satellite over to the NOAA Office of Satellite and Product Operations (OSPO)! I would like to congratulate the team on the successful completion of this milestone. With operational responsibility of GOES-16 transitioned to OSPO, we move one step closer to seeing GOES-16 become an operational weather satellite as GOES-East late this year. The enthusiasm we've seen from the forecasting community for GOES-16 data and imagery has been overwhelming. At the same time, we are also busy preparing for the launch of GOES-S next spring. The satellite has completed environmental testing and mission rehearsals will begin in the fall.

HIGHLIGHTS

GOES-16 will be going east! On May 25, NOAA announced GOES-16's future operational location at the 2017 Atlantic Hurricane Season Outlook press conference in College Park, Maryland. The GOES-East position was chosen primarily because it offers full coverage of the continental United States and provides optimal viewing of the states and cities most impacted by severe weather events including Atlantic hurricanes, thunderstorms and tornadoes, major winter storms and flooding. GOES-16 will move to its operational position at 75 degrees west longitude in November. Until then, the satellite will remain in its current check-out location to allow engineers and scientists to complete checkout and validation of the instruments and science data products. Read the press release for more information.



GOES-R Series Program Acting System Program Director Mike Stringer hands over the "key" to GOES-16 to OSPO Director Vanessa Griffin. Credit: NOAA/NASA

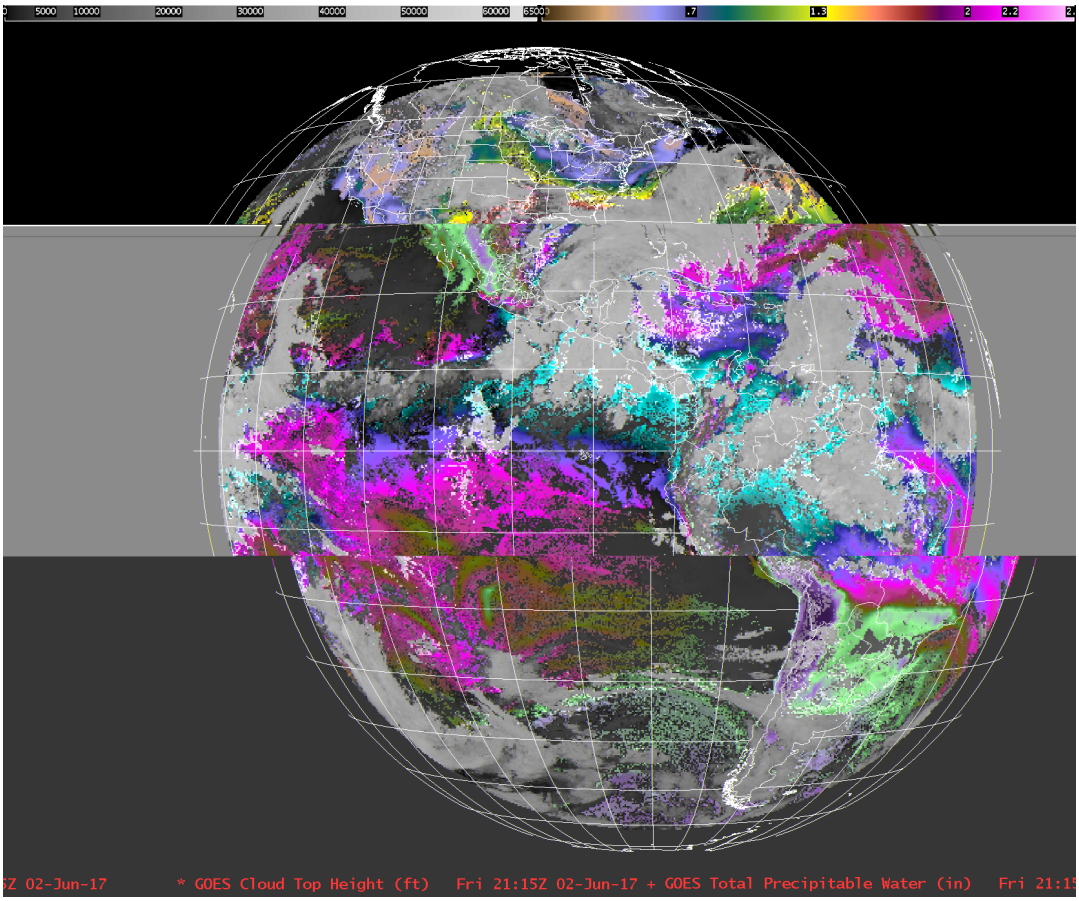
GOES-16 has been handed over to OSPO! The GOES-R Series Program successfully completed two reviews that assessed the readiness of the satellite to transition to OSPO and prepare for operations. **The GOES-16 Post-Launch Assessment Review (PLAR)** was held May 9. This NASA review evaluated the readiness of the spacecraft systems to proceed with

DID YOU KNOW? GOES-16 is already improving aviation forecasting, saving time and money. Recently at San Francisco International Airport, GOES-16 data helped inform a decision to lift a ground delay due to fog. The higher resolution and more frequent updates showed the edges of the fog starting to erode, giving forecasters higher confidence that fog clearing would hold. Thanks to GOES-16, 32 flights were freed up, saving 1,216 minutes of delay, for a cost savings of approximately $100,000. *Source: NWS Aviation Weather Center*

routine operations. On June 20, the **Handover Readiness Review** certified readiness to transition operations of GOES-16 from the GOES-R Series Program to the OSPO operations team. The NESDIS Assistant Administrator gave final approval for the handover on June 23.

The GOES-16 Solar Ultraviolet Imager, Magnetometer and Geostationary Lightning Mapper completed beta validation maturity peer stakeholder-product validation reviews this quarter. Panels of NOAA scientists and user representatives determined the data quality to be validated at "beta" maturity (minimally validated and not optimized for operational use; intended to help users gain familiarity with data formats and parameters). Pre-operational data from all six GOES-16 instruments is now available to users via GOES Rebroadcast.

GOES-16 Advanced Baseline Imager (ABI) derived products have also reached beta maturity. The image below shows the beta total precipitable water and cloud top height products applied to ABI imagery of the full disk on June 2. The colored areas show the amount of water vapor and the height of clouds is depicted in grayscale. The total precipitable water product provides useful information to weather forecasters and hydrologists to improve their situational awareness for a number of situations that require forecasting of events, such as heavy rain, flash flooding, onset of Gulf of Mexico return flow, and the onset of the Southwest United States monsoon. The cloud top height product allows forecasters to determine areas of cloud growth and likelihood of precipitation. Most of the ABI derived products have achieved this milestone.



GOES-16 beta cloud top height and total precipitable water products. Credit: CIMSS

The GOES-S satellite completed thermal vacuum environmental testing in April. Post-environmental Earth-pointing platform and solar array deployments were also successfully completed as well as the post-environmental comprehensive performance and system verification tests. GOES-S will begin electromagnetic interference and compatibility testing this summer to ensure that the electromagnetic signals produced by satellite components do not interfere with its operation.

The Pre-Shipment Review for the Space Environment In-Situ Suite (SEISS) instrument that will fly on GOES-T was held on April 25. An independent team of aerospace engineers verified the instrument has been built according to specifications and meets all Government requirements. SEISS integration with the GOES-T spacecraft is underway.

The GOES-T Solar Ultraviolet Imager (SUVI) and Extreme Ultraviolet and X-ray Irradiance Sensors (EXIS) instruments have been integrated with the Solar-Pointing Platform of the spacecraft. The ABI electronics unit is now integrated with the spacecraft system module.

PROVING GROUND AND PROGRAM SCIENCE

The two-month GOES-16 post-launch airborne science field campaign completed operations on May 17. During phase one, a NASA ER-2 high-altitude plane and its suite of highly specialized instruments took to the air over the Sonoran Desert in Mexico and the Mojave Desert in Ivanpah, California, to validate the GOES-16 ABI. Data from the ER-2 instruments were verified by an array of ground sensors and compared to ABI scans of the corresponding area. The second phase of the field campaign focused on validating GOES-16's GLM. By clearly measuring a single lightning flash with the ER-2's instruments, GLM, and various ground sensors, scientists were able to perform an important "one-to-one" comparison to hone in on GLM's sensitivity to light. The campaign flights provided critical data for the post-launch validation of ABI and GLM performance. View additional images from the field campaign on Flickr and check out a video of a field campaign lightning mission on YouTube.

65,000 feet above Earth, the NASA ER-2 pilot adjusts course to intercept lightning-producing storms during the GOES-16 field campaign. Credit: NASA

The 2017 GOES-R/JPSS Proving Ground Hazardous Weather Testbed (HWT) spring experiment began on June 19 in Norman, Oklahoma, and will run through July 21. Each week, three National Weather Service (NWS) forecasters and one broadcast meteorologist will evaluate new GOES-16 data and imagery products to issue experimental forecast updates and severe thunderstorm and tornado warnings.

Participants in the Hazardous Weather Testbed experiment monitor convective initiation. Credit: NOAA Operations Proving Ground

AWARDS AND ACCOLADES

The GOES-R team was selected to receive the 2017 NASA Agency Honor Awards, Group Achievement Award to recognize their accomplishments in bringing GOES-R, now GOES-16, to launch. In addition, **Flight Project Manager Pam Sullivan received the NASA Agency Honor Awards, Outstanding Leadership Medal**. The Agency Honor Awards are approved by the NASA Administrator and presented to carefully selected individuals and groups of individuals, both Government and non-Government, who have distinguished themselves by making outstanding contributions to the agency's mission. These awards are NASA's most prestigious awards and will be presented at the NASA Headquarters Honor Awards Ceremony on October 25.

The GOES-R Ground Segment Project Schedule Management Team was honored with a 2017 Department of Commerce Bronze Medal for expertly recovering 11 months of schedule to deliver the ground system on time to meet GOES-R launch deadlines. The Bronze Medal is the highest honor award given by the Under Secretary of Commerce for Oceans and Atmosphere. Jim Valenti, Ground Segment Project Manager, accepted the award on behalf of the team at a May 23 ceremony at NOAA in Silver Spring.

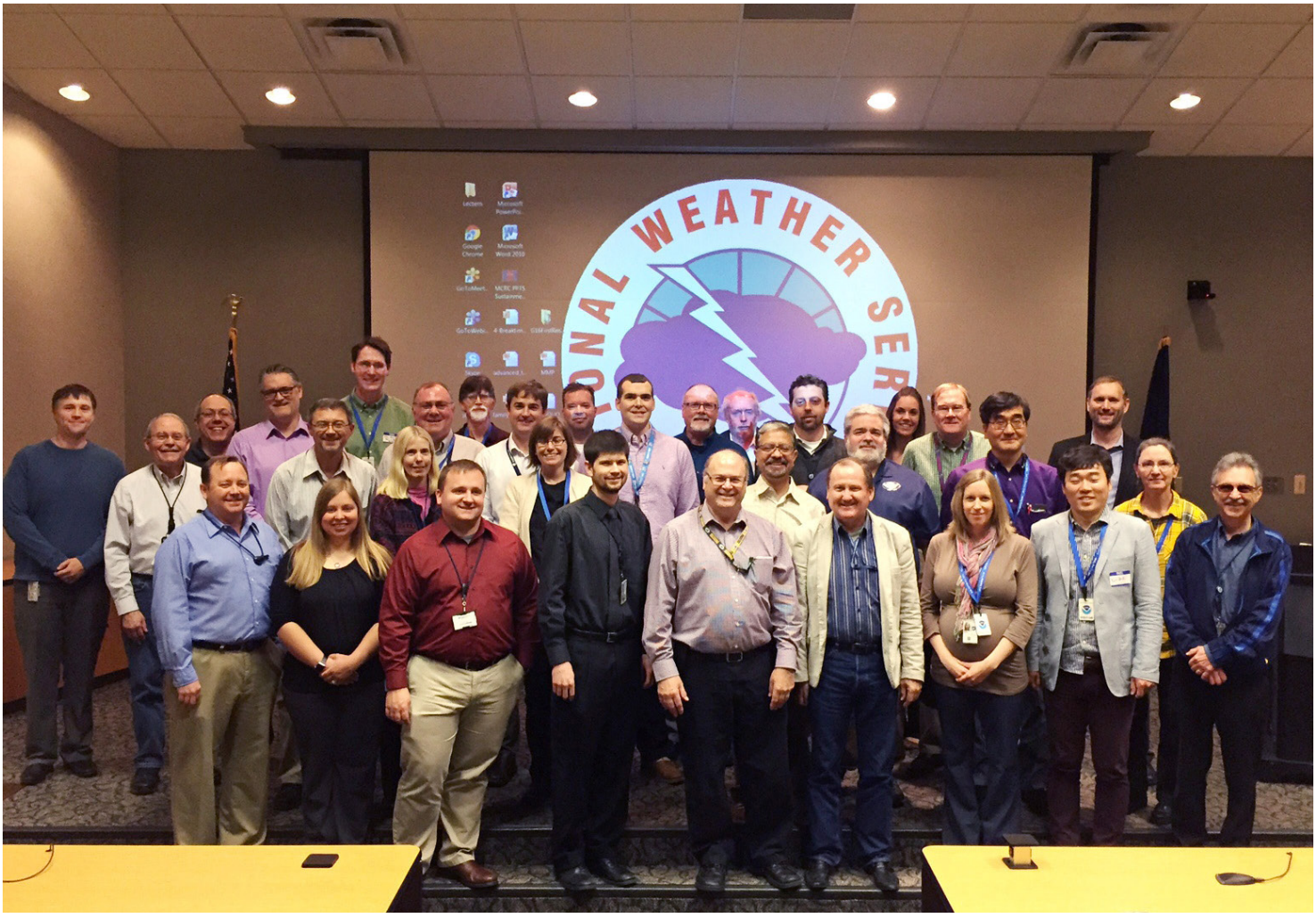
CONFERENCES AND EVENTS

The 8th NOAA Testbeds and Proving Ground Workshop was held April 25-26 at the NWS Training Center in Kansas City, Missouri. The workshop focused on exchanging lessons learned and best practices within current NOAA and related testbeds/proving grounds, and on building cross-testbed collaborations and synergies. The GOES-R Series Program Senior Scientist provided a GOES-R Proving Ground summary at the workshop. A presentation by GOES-R Proving Ground Satellite Liaison Chad Gravelle entitled "Using Research-to-Operations Evaluation Results to Shape a National Weather Service Training Experience" won the best paper award.

A GOES-16 First Results Workshop was held April 27, following the annual Testbed and Proving Ground Workshop, attended by approximately 40 NWS forecasters and managers. Presentations included a GOES-R Series Program status report, information on ABI and GLM, and use case examples from selected GOES-R satellite liaisons collocated with NWS national centers and testbeds.

The 51st Canadian Meteorological and Oceanographic Society (CMOS) Congress took place June 4-8 in Toronto. The theme of the meeting was "Future Earth: Weather, Oceans, Climate." The congress brought together a wide range of scientists and other professionals from across Canada and other countries with a focus on topics in atmospheric, ocean and earth sciences. A GOES-R Series readiness session as well as a GOES-16 early results and forecasting applications workshop showcased preliminary GOES-16 data and prepared users for the GOES-R Series.

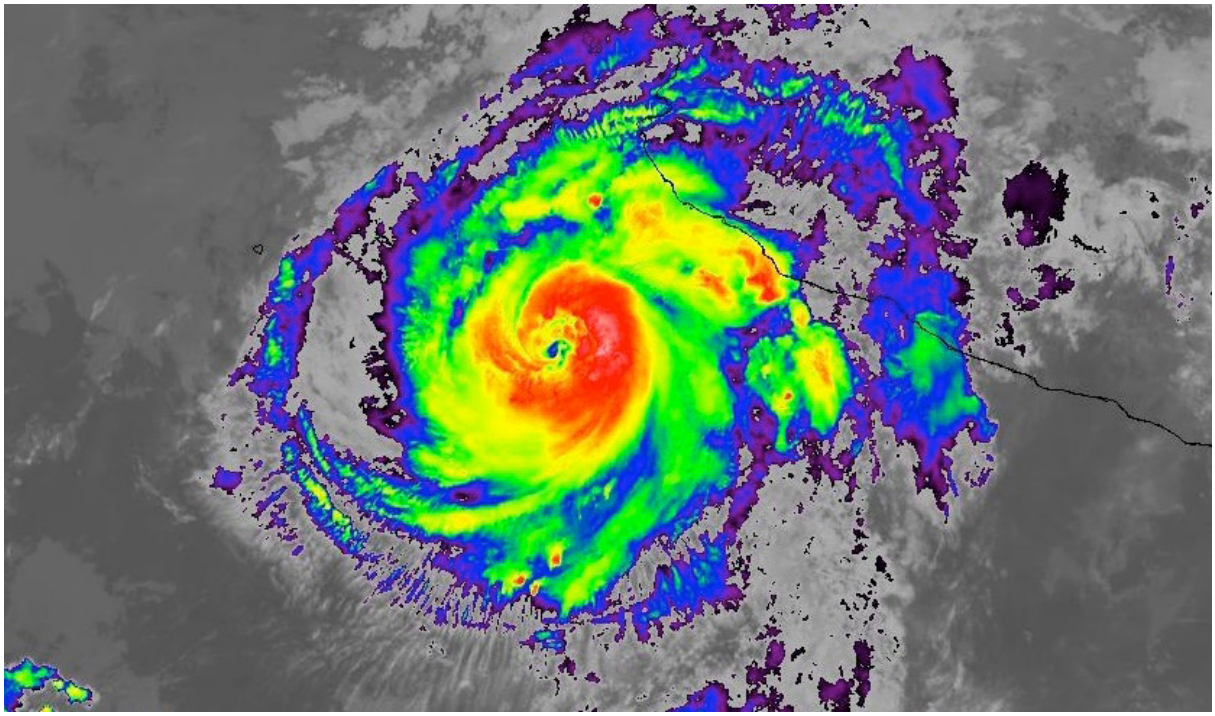
The short course "Introducing GOES-16: Early Results and Forecasting Applications for Broadcasters," was offered on June 20, prior to the 45th American Meteorological Society Conference on Broadcast Meteorology/Fourth Conference on Weather Warnings and Communication in Kansas City, Missouri. This course introduced users to the new capabilities made possible by ABI, GLM, and derived products for improved environmental intelligence, forecasts and warnings.



GOES-16 First Results Workshop participants. Credit: NOAA

GOES-16 DATA AND IMAGERY

GOES-16 saw its first hurricane in June! Shown below is ABI Band 5 infrared imagery of Hurricane Dora, the first of the 2017 season, in the East Pacific Ocean on June 26, 2017. See more GOES-16 pre-operational imagery on the GOES-R Series website.



MEET THE TEAM

In this issue, meet Jamese Sims, Ph.D., algorithm engineer and satellite product manager. In this role, Jamese oversees GOES-R Series Products, Systems, Development and Implementation, or PSDI. She champions and supports development and implementation of weather satellite products to meet customer needs.

Working with the extremely talented engineers and scientists who collaborate as a team to meet the needs of customers, the nation, and the world is her favorite part of her job. A meteorologist by background (she holds a Bachelor of Science degree in Meteorology along with a Doctorate of Philosophy in Atmospheric Sciences), Jamese has a great appreciation for the importance of satellite data and is thrilled to see the direct impact GOES-16 is having on the weather community. "This revolutionary data allows scientists to view our planet in new ways, leading to more accurate forecasts," she says.

Sims joined the GOES-R team in 2016 and was recently honored as the Office of Satellite Ground Services Employee of the Quarter and was NOAA Employee of the Month in June. Outside of work, she loves spending time with family and friends, cooking, reading and learning new things. She's also passionate about mentoring youth in underrepresented groups and encouraging them to pursue careers in STEM (Science, Technology, Engineering and Math).

Upcoming Events

2017 NOAA Satellite Conference
July 17-20, 2017
New York, New York

GOES-S Educator Workshop
August 23, 2017
Littleton, Colorado

42nd Annual National Weather Association Meeting
September 16-21, 2017
Garden Grove, California

2017 EUMETSAT Meteorological Satellite Conference
October 2-6, 2017
Rome, Italy

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